METHODS AND SYSTEM FOR EFFICIENT ROUTE LOOKUP

ABSTRACT

[055] A method and system for performing a route lookup in a routing system, including a plurality of routes places a bound on the number of accesses to the memory necessary to perform a route lookup and guarantees the minimal amount of memory to achieve a particular bound. For each node the memory required to meet a bound on the depth of the tree rooted at that node is computed, given the distribution of routes in the network. A route can be added or deleted which changes the topology and hence the memory required to meet the bound, but not all nodes need to recalculate their costs, and an incremental algorithm minimizes the overall costs of performing a route topology change and the subsequent lookup since the representation that uses minimum memory and meets the bound is chosen.

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